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COMPLETE SPECIFICATION.

An Improved Construction of Stretcher for Sick and Wounded Persons, and of Vehicles and Apparatus Employed in Combination therewith.

I, MICHAEL TELL, of VII Kaiserstrasse 11, Vienna, Austria, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement :—

This invention relates to a folding stretcher for transporting sick and wounded persons. The essential feature of the invention consists in that the supporting surface of the stretcher is formed of several parts hinge-jointed together, which are formed of flexible woven material, and are provided at the edges with loops for the insertion of the stretcher poles.

By means of suitably applied straps and buckles, the said supporting surface can be brought into the form which is requisite for enabling an invalid to be transported in a lying or a sitting posture, and they also enable the said surface to be carried on the back folded together in the form of a knapsack.

The arrangements of the stretcher are such that it can be easily connected to ropes for hoisting or to moveable frames, such as two wheeled vehicles, wheeled chairs, sledges, wheel barrows &c.

On the accompanying drawing

Fig. 1 shews a perspective view of the said supporting surface,

Fig. 2 shews a separate view of one of the parts,

Fig. 3 shews the stretcher surface folded together in form of a knapsack.

Fig. 4 shews the mode of forming the surface,

Fig. 5 shews a longitudinal section of the surface,

Fig. 6 shews the surface combined with the stretcher bars for forming the complete stretcher, and

Figs. 7, 8 and 9 are detail views.

Fig. 10 shews the joint of a folding stretcher bar formed of two parts.

Figs. 11 and 12 shew side and front views of the stretcher bars in combination with a frame with wheels.

Fig. 13 shews the stretcher arranged for the transport of invalids in sitting posture.

Figs. 14 and 15 shew side and front views of a framing mounted on wheels adapted to receive the stretcher.

Figs. 16 and 17 shew side and end views of a sledge frame for receiving the stretcher, arranged to be taken to pieces.

Fig. 18 shews a side view of a separate supporting surface with arm supports.

Fig. 19 shews a wheeled chair, adapted to receive the stretcher.

Figs. 20 and 21 shew side and front views of a wheeled chair, and

Figs. 22 and 23 shew a folding hoist for lowering the stretcher from the upper story of a building.

As shewn at Fig. 1, the supporting surface consists of separate parts A B C D E F connected together at their ends by strips of flexible material *a b c d e*.

The part A to F of the surface are made of pealed and split cane or reeds in a similar manner to ordinary wickerwork, as at Fig. 4, whereby the supporting surface is rendered very flexible and light, while affording the requisite strength.

For using the stretcher for invalids in a lying posture, stretcher bars G Fig. 6 are passed through the loops a^1—c^1 attached to the several parts A to C and through loops formed on the part D by means of straps or bands d^1; by this means the parts A to D are supported and maintained in one and the same plane.

[*Price* 8*d*.]

For forming the footboard of the stretcher, the part E is turned up and secured in the desired position by fastening the straps d^2 in the buckles e^1. The part F is turned down against E and is secured thereto by means of straps e^2 on E that are passed through the buckles f of F. The straps d^2 are strengthened by a steel insertion d^3 which prevents the footboard E from falling inwards.

By means of a strap b^2 which is attached to the side b^3 of the part B and is secured to a buckle b^5 of the side b^4, the invalid can be strapped down on the stretcher.

In order to protect the invalid against inclement weather or to cover him up during transport, a folding hood A^1 Figs. 2 and 6 is secured to the part A by straps a^2 a^3 Figs. 2 and 8, which are passed through loops a^5 of the part A.

When this hood is not in use, it is held folded by means of the end of the securing strap a^3, which is for this purpose passed through a buckle a^4 on the front rib of the hood, as at Fig. 2.

For the same purpose a waterproof cover B^1 Fig. 2 is attached to one of the sides b^3 of the part B by means of straps b^6 Fig. 6, which are passed through loops b^7 Fig. 7 on the side b^3. This cover is secured in a rolled up condition, by means of the straps b^8 Figs. 7 and 2, and buckles b^9 Fig. 1, and when unrolled it covers the whole stretcher and also fits cap-like over the footboard E F, as at Fig. 6. The upper edge of the cover B^1 carries a hook b^{10} Fig. 6, which, when hooked into the buckle a^4 of the hood A^1 keeps the latter in the raised position. This upper edge of the cover also has two rings b^{11} which are hooked into the hooks a^6 of the edge piece a^7 attached to the front edge of the hood, and reaching over the covering B^1. In addition, the cover B^1 is secured by buttoning to the sides b^3 b^4 of the part B and to the footboard E, by means of buttons b^{12} b^{13} b^{14} and e^3, the buttons b^{12} b^{14} of the sides b^3 and b^4 also serving for the attachment of the part a^7 of the hood A^1. a^8 Fig. 6 is a flap which closes an opening in the hood A^1. If it be not necessary to close the covering of the stretcher entirely, the part a^7 of the hood can be turned back.

The stretcher bars G can be provided with feet g Fig. 9, which are connected together in pairs by a cross bar g^1 provided with loops which are slid on to the bars G and are secured in position by screws g^2. The feet g are hinge jointed to their cross bar so as to be easy of transport when the stretcher is packed up.

The bars G can be made to fold together, in which case the ends thereof have hinges g^3 Fig. 10, the securing of the bar at that point being effected by a bolt g^4 which is inserted in loops g^5 on the sides of the two parts.

For facilitating the transport of the stretcher, for example, through mountainous countries, it is arranged so as to be carried in a folded condition like a knapsack. For this purpose, the cover B^1 being rolled up, the parts F E are folded against the part D, and the other parts are then folded together, so that all parts C D E and F are then situated within the part B having the side walls b^3 b^4.

Lastly the part A with the hood A^1 is folded on to the others as a cover and is secured by means of straps c^2 and buckles a g situated on the outer sides of the parts A and C.

The outer side of the part B has moveable loops b^{15} through which the carrying straps B^2 Fig. 3 are passed. In order that these straps may also be used for carrying the unfolded stretcher Fig. 6, they have eyes b^{16} into which the ends of the stretcher bars G are inserted, while the straps B^2 are slung over the shoulders in the usual manner.

In order to carry invalids in the sitting posture, the part B has adjustable straps b^{12} passing through loops, and having spring hooks which are hooked into rings c^3 attached to straps on the part C that forms the seat, the angular position of the parts B and A relatively to C being adjustable by altering the length of the strap b^{17} by means of the buckle as shewn at Fig. 13.

The part C may also be provided with a fixed or removeable arm rest c^4 Fig. 18, in which case the straps b^{17} and rings c^3 can be replaced by segments c^5 attached to the arm rests. These segments pass through holes in the part B and have

holes into which setting screws c^6 are screwed when the part B has the required position.

The head part A is secured in the position shewn in Fig. 13 by means of flaps a^{10} stiffened by steel insertions, which are secured to buttons b^{18} Figs. 1 and 3; it can however be folded inwards against the back part B as at Figs. 19 and 22. This last described arrangement of the stretcher is mainly employed when the invalid is to be transported on the back of the carrier.

The invalid is secured against falling out by means of the before described strap b^2.

In the arrangement of the parts shewn at Fig. 13 for the last named purpose, the upper leg part D is held in position by making the upper connecting strip c Fig 5 tighter than the under one. If stretcher bars G are used, the straps d^1 d^1 are buckled over the same in addition to the loops C^1, and thus the part D is better supported, as indicated by the dotted lines in Fig. 13.

The foot board E already described in Fig. 6 also serves as foot board in this case, or the part E can be lowered as shewn in dotted lines and the part F be secured by strap d^2 in position as foot board.

The pillow A^2, hooked on to rings a^2 and secured by a strap a^{12} as shewn at Fig. 2, is strapped on to the outside of B when the stretcher is arranged to be carried on the back, as shewn at Fig. 3, and serves then as cushion. The parts A to E have straps for enabling cushions to be strapped on them if required; also, for the case when the head part A is turned down, such straps are also provided on the back thereof, which are not shewn.

The transport of the stretcher with the invalid can in many cases be effected by means of a two wheeled truck Figs. 14 and 15, or a sledge Figs. 16 and 17, the latter being separable if required.

For receiving the stretcher these vehicles have side hooks i into which the stretcher bars G are introduced and in which they are secured by setting screws i^1, these being prevented from injuring the bars by providing the corresponding parts of the latter with metal plates g^6.

If the lower ends of the bars G be provided with bearings g^7 Figs. 11 and 12, for the reception of an axle with two small wheels k, of variable gauge, the stretcher can also be transported like a wheel-barrow. At the ends of the bars are provided spikes k^1 whereby the bar can be used as an alpenstock.

If the stretcher is adjusted to the position at Fig. 13, it can be combined with a wheeled chair Fig. 19, or a Bath chair Fig. 20, the seat C^1 of the latter being provided with straps c^7 which are passed into the buckles c^8 of the loops C^1 Fig. 1 and into the lower loops b^{15} of the part B, for securing the stretcher.

In order to enable the stretcher with an invalid to be more readily lifted on to the seat of the chair and attached thereto one of the side arm rests l Fig. 21 is made to turn down on hinges and the handle is made removeable. The part D can have the desired position imparted to it by means of adjustable supports m on the chair. In order, in special cases, to enable the two feet of the invalid to have different positions imparted to them, the parts F, E, D, may be each divided longitudinally into two separate parallel parts, as shewn at Fig. 19, in which case the necessary straps d^2 with buckles for adjusting these parts must be provided in duplicate.

To enable an invalid to be lowered in a sitting posture in the stretcher from a raised locality, the stretcher is secured by loops C^1 Fig. 22 to ropes n^1 provided with safety hooks n, which ropes are connected to a ring n^2 into which is hooked the lowering rope n^3.

For guiding the stretcher during the descent, a rope n^4 is connected to it which is controlled from the ground, or place to which the stretcher is to be lowered.

If the lowering is to be effected from the window opening of an upper story, the rope n^3 is led over a roller o Figs. 22 and 23, which is carried by a beam p^1 supported by struts p; these are provided with points at bottom and are hinge-jointed to the beam p^1. They may be made in two or more separate parts so as to be easy of transport, the parts being connected by hinges g^3 and secured in position by bolts

or catches g^4, in a similar manner to that described in connection with the stretcher bars at Fig. 10.

For strengthening the parts B, C and D of the stretcher, steel ribs *r* Fig. 1 may be employed, which are woven into the parts B and C parallel to the canes; in D, on the other hand, they are at right angles to the canes and are rivetted on externally.

Lastly, it is to be observed, that in place of providing the stretcher with the feet *g g* as described, the placing of invalids upon the same and the raising up thereof may be facilitated by placing the stretcher upon chairs.

In order to render this possible under all circumstances, each stretcher can always be accompanied by a folding seat of any simple construction such as crossed legs pivotted together at their middle and connected by straps at the upper end.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is.

1. A stretcher composed of a number of flat parts A B C D E F flexibly connected together, which are provided at their sides with loops a^1 b^1 c^1 d^1 through which are passed the stretcher bars G for securing the parts in the stretched condition and which are provided with other loops, straps with buckles, and hooks, in order to impart to the parts of the stretcher a chair like form, while on removal of the stretcher bars, the parts can be folded together so as to be carried as a knapsack, substantially as described.

2. In a stretcher such as is referred to in the preceding claim, constructing the parts D E F of longitudinally divided form, the part D being provided with extensible loops d^1 and with straps d^2 strengthened by steel strips, substantially as described.

3. In a stretcher such as is referred to in the first claim, the use of feet *g g* hinge-jointed to a transverse bar which is provided with loops at the ends through which the stretcher bars are passed, substantially as described.

4. In a stretcher such as is referred to in the first claim, the use of jointed stretcher bars G, provided at the one end with bearings for the reception of an axle with wheels, substantially as described with reference to Figs. 10 and 11 of the drawings.

5. The combination of the stretcher referred to in the first claim with wheeled chairs or vehicles, having adjustable supports *m* for the parts that carry the feet, and of which the arm rests *l* can be turned down and the pushing handles l^1 removed, substantially as described.

6. The combination of the stretcher referred to in the 1st claim with a jointed framing *p* p^1 and rope connections *n* n^1 n^2 n^3 for lowering the stretcher, substantially as described with reference to Figs. 22 and 23 of the drawings.

Dated this 29th day of October 1890.

ABEL & IMRAY,
Agents for the Applicant.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

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(2 SHEETS)
SHEET 2

Fig. 14

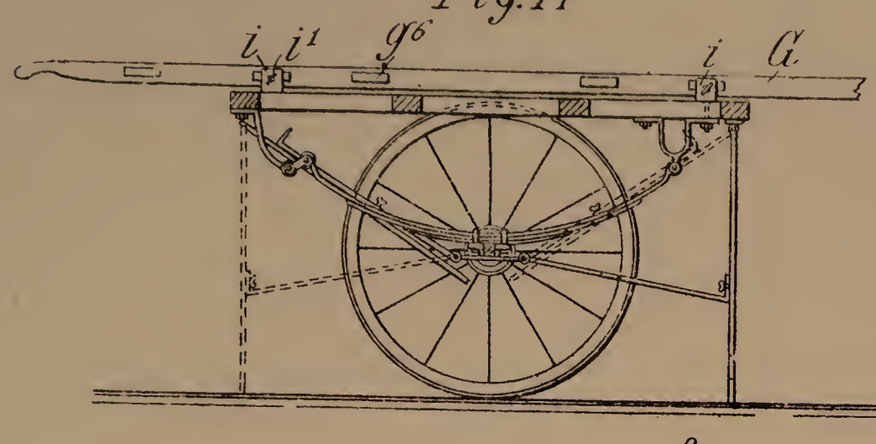


Fig. 15

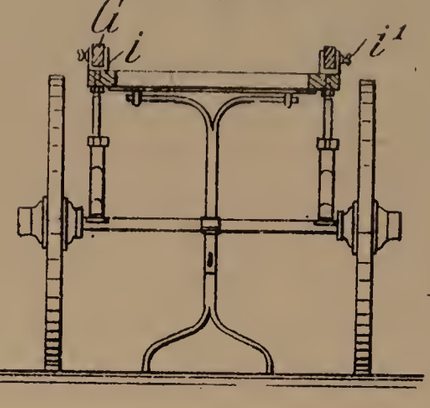


Fig. 13

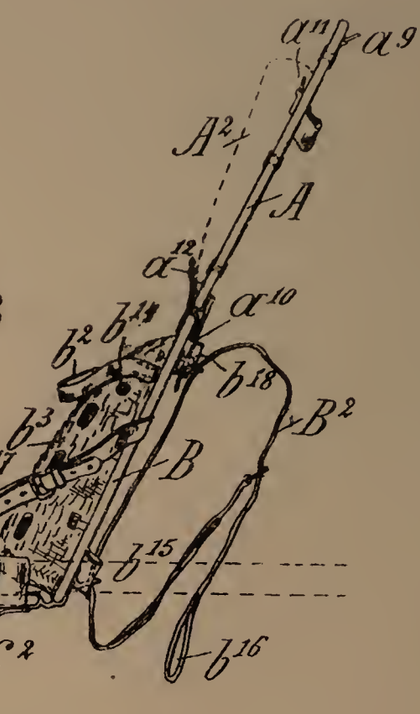


Fig. 18

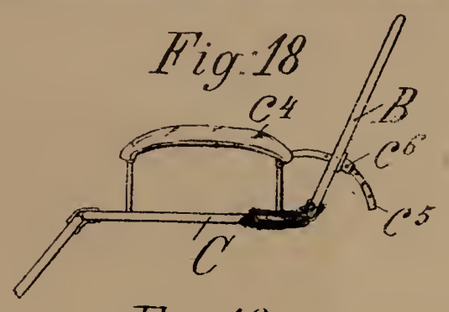


Fig. 16

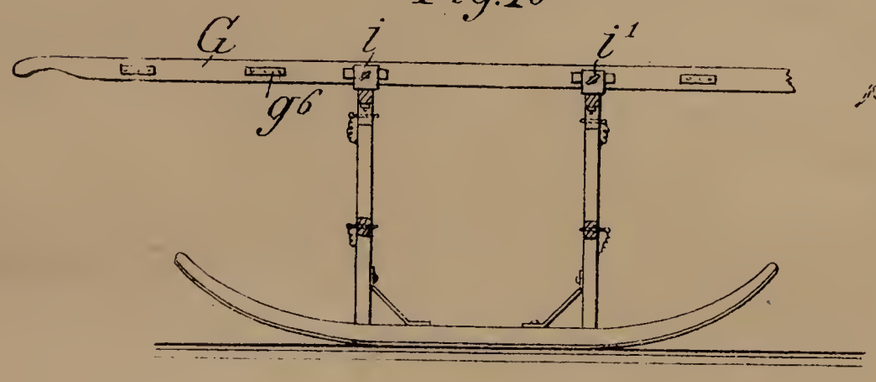


Fig. 17

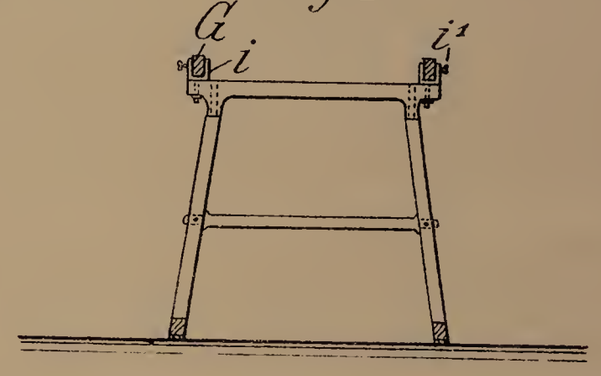


Fig. 19

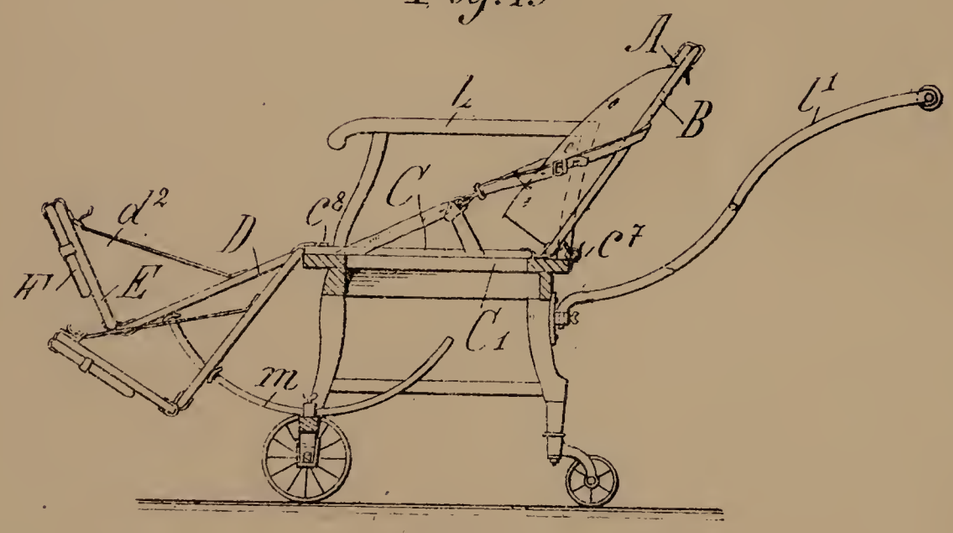


Fig. 23

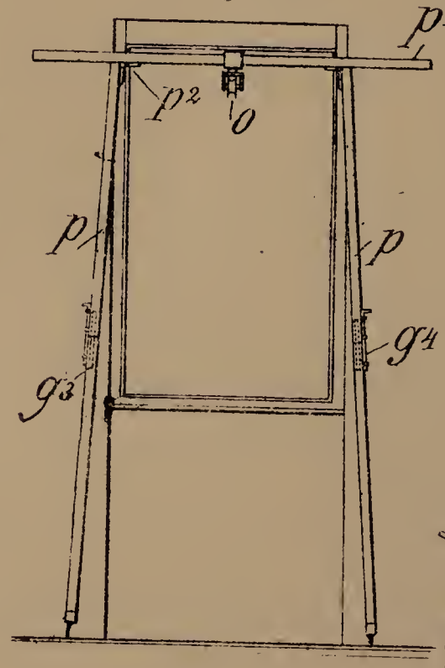


Fig. 22

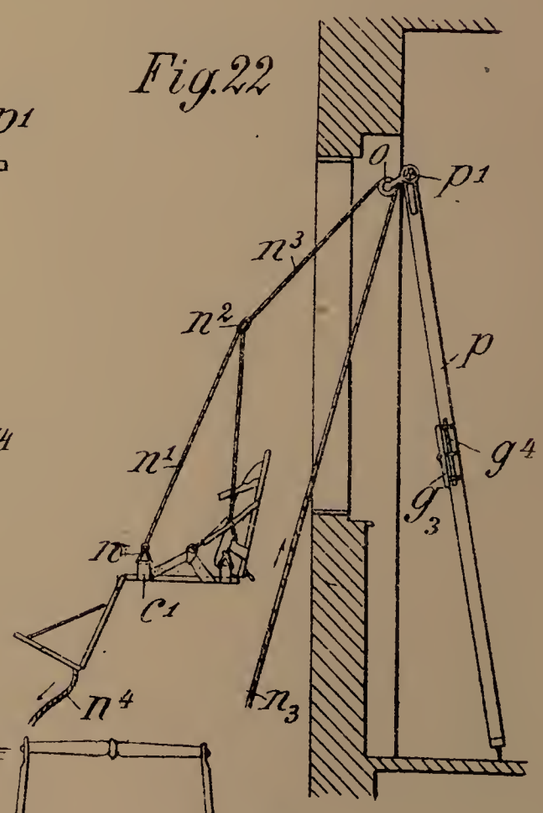


Fig. 20

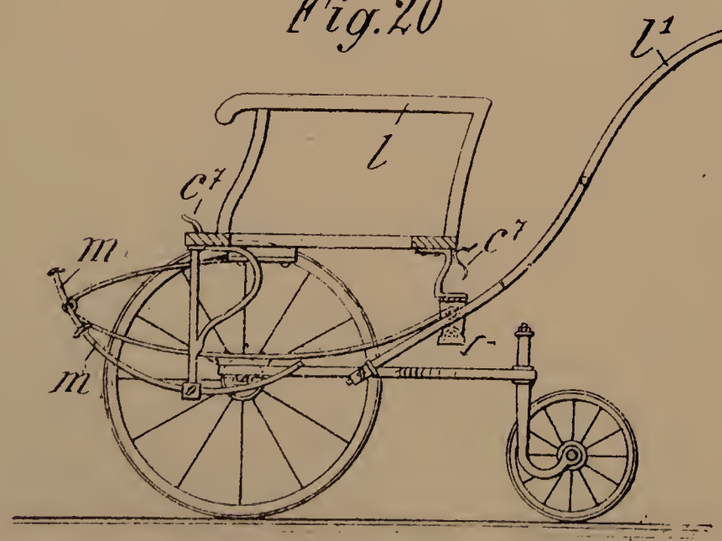
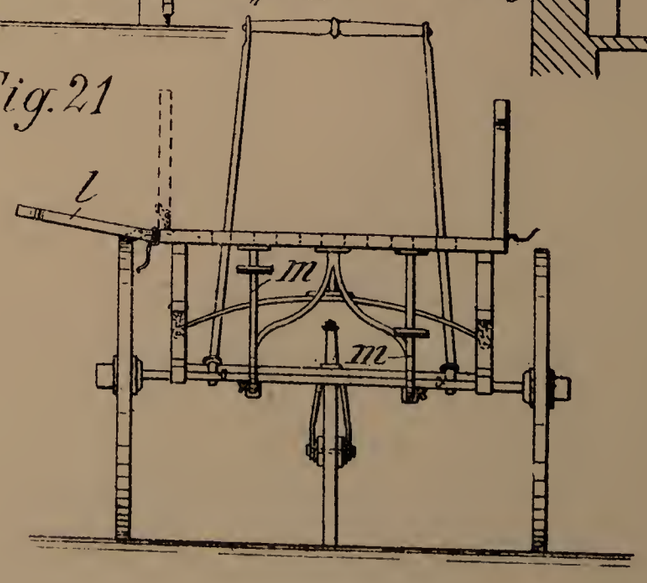


Fig. 21



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